Nov. 3, 1959 A. KRAUTKRÄMER 2,911,128

SPOUT AND CAP FOR A CONTAINER

Filed Oct. 7, 1952 2 Sheets-Sheet 1

Fig. 1

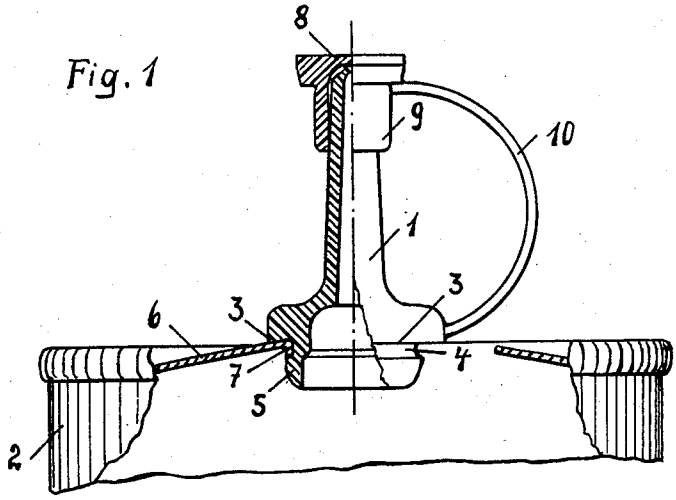
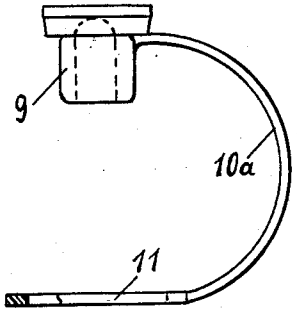


Fig. 2



Inventor
Adam Krautkrämer
By Richard Lang
Atty

Nov. 3, 1959 A. KRAUTKRÄMER 2,911,128

SPOUT AND CAP FOR A CONTAINER

Filed Oct. 7, 1952 2 Sheets-Sheet 2

Fig. 3

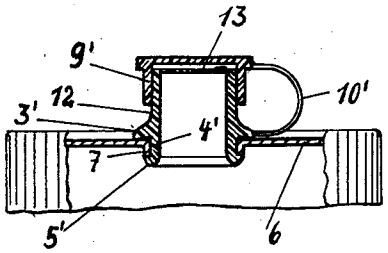


Fig. 4

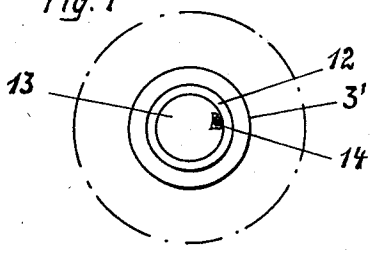


Fig. 5

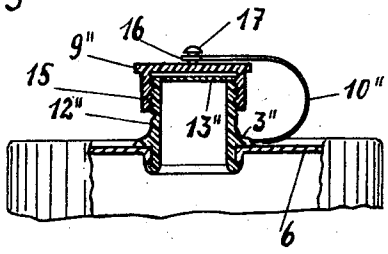


Fig. 6

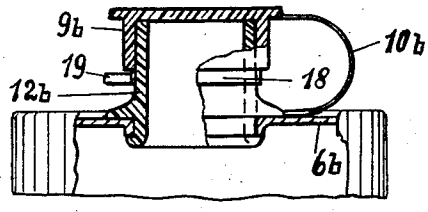
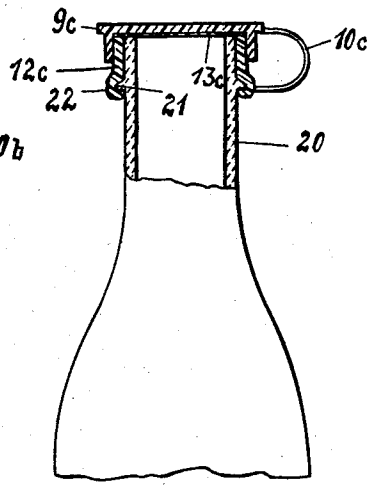


Fig. 7



Inventor
Adam Krautkrämer
By Richard Lynch
Reg

United States Patent Office

2,911,128

Patented Nov. 3, 1959

2,911,128

SPOUT AND CAP FOR A CONTAINER

Adam Krautkrämer, Budenheim (Rhine), Germany

Application October 7, 1952, Serial No. 313,387

Claims priority, application Germany October 22, 1951

6 Claims. (Cl. 222—543)

This invention relates to a closure for containers, more particularly to such closures which while in their closing position permit a partial emptying of the containers.

Tubes, cans, canisters, barrels, carboys, bottles, and similar containers are provided with closures to close the container opening for transportation and storage but also to permit an occasional partial removal of the contents. Such closures usually consist of a discharge nozzle as in the case of containers or tubes for lighter fluid, of screw caps for cans, of lids for barrels and drums, of stoppers for bottles, etc.

Aside from stoppers, the known closures are mostly made from the same material as the container proper. Their application requires the use of packing material and often several operations, all of which causes relatively high costs.

Screw caps or stoppers when used for partial discharges of the contents are frequently lost.

The known closures do not guarantee the contents of the container to be fully delivered.

The primary object of my invention is to overcome all of the shortcomings of the conventional closures of the type referred to.

To the accomplishment of this object and other more detailed objects which will become clear hereinafter, my invention consists in a closure for containers, its elements, and the relation of these elements one to the other, as are more particularly described in the specification and sought to be defined in the claims.

The specification is accompanied by drawings in which:

Fig. 1 is a partially sectioned side elevation of the upper part of a container and of its closure in closing position, the closure being a discharge nozzle according to the present invention;

Fig. 2 shows the cap of the discharge nozzle of Fig. 1 as a separate part;

Fig. 3 is a sectioned side elevation of a can closure embodying features of a modified closure;

Fig. 4 is a plan view of the closure of Fig. 3, the cap being omitted;

Fig. 5 is a sectioned side elevation of another modification of a can closure;

Fig. 6 is a partially sectioned side elevation of a further modification of a can closure; and

Fig. 7 is a sectioned side elevation of a bottle closure according to the invention.

The discharge nozzle **1** of a container **2** is made from a material, such as synthetic resins or other synthetic material, acid resistant rubber (Buna), etc., that can be deformed under pressure and will resume the original shape when the pressure is released. The lower end of the discharge nozzle **1** comprises a rooflike flanged section **3**, a collar **5**, and a constricted section **4** between **3** and **5**.

The opening in the container top **6** is surrounded by an angularly provided flanged rim **7** which snaps into the depression or constriction **4** when the discharge nozzle is set in place. The flanged rim **7** is firmly held

between the collar **5** and the flanged section **3** under substantial elastic pressure which guarantees a tight connection between the container and discharge nozzle. The spout **8** of the discharge nozzle **1** is closed for shipping and storage of the filled container, and is pierced by the ultimate consumer with a needle or a similar device, or cut off in a known manner.

The discharge nozzle is closed by a cap **9** which is preferably made from the same material as the discharge nozzle and is firmly connected by means of a thin resilient rod **10** with the lower end of the nozzle, for instance, the flanged section **3**. Thus, the cap may be temporarily removed without danger of loss and without rendering the putting in place and the taking off difficult.

The connection rod **10***a* may form a ring **11** at its lower free end, as shown in Fig. 2, which ring is clamped fast between the flange **3** and the container top **6** when the nozzle is set in place.

Upon filling the container **2**, the lower end of the nozzle **1** is obliquely introduced into the opening in the container top **6**, and by applying pressure centrally, the collar **5** is completely forced into the opening whereupon the rim **7** snaps into the depression or groove **4** of the nozzle.

In the embodiment of the invention shown in Fig. 3, the closure illustrated being suitable for cans, drums and similar containers, the closure body **12** is provided with a flange **3'**, a constriction **4'**, and a collar **5'**. The upper opening of the body **12** is closed by a thin, easily destructible wall **13**, such as a tearing membrane. The membrane is conveniently provided with a tearing flap **14**.

The cap **9'** is integrally connected with the flange **3'** by means of the elastic rod **10'**.

From Fig. 3 it will be seen that the flange **3'** of the closure body **12** is both upwardly and inwardly relieved to form the constriction **4'**. The flange **3'** inclines, therefore, in a downward direction. When the closure is installed and the offset flange **7** snaps into the constriction, the flange **3'**, due to its downward inclination and the greater pressure thus exerted on the container top **6**, will ensure a particularly tight seal, this seal being effected besides the seal effected by the flange **7** and the constriction **4'**.

In the embodiment shown in Fig. 5, the cap **9''** is secured to the body **12''** by means of the threading **15**. The rod **10''**, at one end, is integrally connected to the flange **3''**, and at its other end it is fastened by means of a ring **16** to a button **17** of the cap **9''** so that the cap may be turned for tightening.

Referring to Fig. 6, the body **12***b* is open, and the cap **9***b* is integrally connected with the body **12***b* by means of a resilient strip **10***b*. The cap **9***b* is provided on its bottom with a thin tearing strap **18** which, in the sealed condition, is cemented to the body **12***b*. The tearing strap has a flap **19**, by which the former can readily be ripped off, allowing the cap **9***b* to be removed.

Fig. 7 illustrates the construction of the body **12***c* to fit a bottle neck **20**. The neck is provided with a protruding ring **21** which registers with an interiorly provided annular groove **22** in the body **12***c*. The body **12***c* is preferably equipped with a tearing membrane **13***c* corresponding to those shown in Figs. 3 and 4, and with a cap **9***c* carrying a connecting rod **10***c*.

It is believed that the construction and handling of my container closure, and the many advantages thereof, will be understood from the foregoing detailed description thereof.

Some of the features and advantages of the closure of the invention are reviewed hereinafter.

The closure is made from a material of limited elasticity, preferably materials based on synthetic resins or acid

resistant rubber. The body of the closure is provided near its lower end with an external depression or groove extending around the circumference of the body, and a flange adjacent to and above said groove. The very end of the body is suitably shaped to facilitate the introduction of the body into the container and to make it possible for the opening-confining edge to snap into the groove, whereby the said flange of the body presses against the container top.

For containers with a neck, such as bottles, the closure of my invention assumes an inversed form inasmuch as the body is provided near its lower end with an internal groove which receives under tension, when the closure is forced over the neck, a corresponding protrusion provided on the bottle neck.

The cap which closes the closure body is secured thereto, preferably to the lower end of the body, by means of an elastic connection which prevents the loss of the cap without interfering with occasional temporary removals of the cap, as is required for partial emptying of the container.

The closure of the invention has important advantages over the conventional constructions. The container is filled through its opening, whereupon the closure is forced into place. The closure locks itself in position and closes the opening tight to air and liquid, this being due to the inherent tension of the closure.

The opening of the closure is closed by a tearing membrane which guarantees genuineness of the contents of the container. The closure opening, after a partial discharge of the contents of the container, is closed by an ordinary cap or a screw cap. Either cap is permanently connected to the body of the closure and cannot be lost.

Undesirable effects of the conventional cork closures for bottles are avoided due to the use of chemically inert material.

The closure of the invention can be produced at low cost. It does not require special designs of the container opening, and it can be installed without the use of tools or fixtures.

It will be apparent that while I have shown and described my invention in a few forms only, many changes and modifications may be made without departing from the spirit of the invention defined in the following claims.

I claim:

1. In combination with a container having a substantially flat top provided with an opening, the wall of said opening having a depending relatively short flanged rim, a closure comprising a resilient discharge tubular body, said tubular body having a narrow discharge outlet and an integral enlarged portion below said outlet and receivable in said opening, said enlarged portion including a lateral peripheral flange at its upper end and a depending substantially frusto-conical skirt of smaller external diameter than said lateral flange, said skirt having its outer surface at the juncture of the lateral flange therewith formed with an annular recess shaped to receive said flanged rim, the portion of said skirt below said recess constituting a collar of greater external diameter than said opening, and said collar terminating in a substantially mushroom-shaped lower end so as to facilitate insertion of the skirt through the top opening, said lateral flange being in overlapping engagement with the top of the container, said flanged rim being snapped into sealing engagement with said recess when the closure is inserted through the opening in said top, and the collar of said skirt being exposed within the container and of substantially greater length than said recess and said flanged rim, the parts being constructed and arranged so that the flanged rim is firmly held between said collar and said lateral flange under substantial elastic pressure in order to insure a firm and tight connection both laterally and longitudinally of the closure with the container.

2. The combination of a closure and container as set forth in claim 1 wherein the discharge outlet of said tubular body is closed by a hollow cap, said cap being integrally connected with the flange of said tubular body by means of a resilient link.

3. A spout for a container adapted to be attached to a wall thereof and extend outwardly through an opening therein comprising, a spout base of plastic material adapted to extend through said opening and including an inner end, and outer plastic flange integral with said base and adapted to bear against an outer surface portion of said wall adjacent to said opening and make sealing contact therewith, and an inner plastic flange integral with said base and adapted to bear against an inner surface portion of said wall adjacent to said opening and make sealing contact therewith, the inner and outer flanges each adapted to cover an area greater than that of said opening so as to embrace the wall portion defining the opening, the inner flange being of small width to provide a step construction and the outer flange being adapted to cover a relatively large area of said wall portion surrounding said area, the spout base being tapered in a portion extending inwardly from adjacent to said inner flange to said inner end to aid in inserting said base into said opening, the extreme inner end of the spout having a diameter less than that of said opening, the portion of the spout between said flanges being relatively thick in comparison to the thickness of said tapered portion in order to aid in preventing accidental inward distortion thereof.

4. A container, comprising, a wall having an opening defined by an inwardly turned wall portion, and a spout positioned in said opening including a spout base of plastic material extending through said opening and including an inner end, an outer plastic flange integral with said base and bearing against an outer surface of the wall adjacent to said inwardly turned wall portion and in sealing contact therewith, and in inner plastic flange integral with said base and bearing against the inner edge of said inwardly turned wall portion, the inner flange being of small width to provide a step construction and said inwardly turned wall portion being located between said flanges, the spout base being tapered in a portion extending inwardly from adjacent to said inner flange to said inner end to aid in inserting said base into said opening, the extreme inner end of the spout having a diameter less than that of said opening, the portion of the spout between said flanges being relatively thick in comparison to the thickness of said tapered portion in order to aid in preventing accidental inward distortion thereof.

5. A spout for a container adapted to be attached to a wall thereof and extend outwardly through an opening therein comprising, a spout base of plastic material adapted to extend through said opening and including an inner end, an outer plastic flange integral with said base and adapted to bear against an outer surface portion of said wall adjacent to said opening and make sealing contact therewith, and an inner plastic flange integral with said base and adapted to bear against an inner surface portion of said wall adjacent to said opening and make sealing contact therewith, the inner and out flanges each adapted to cover an area greater than that of said opening so as to embrace the wall portion defining the opening, the spout base being tapered in a portion extending inwardly from adjacent to said inner flange to said inner end to aid in inserting said base into said opening, the extreme inner end of the spout having a diameter less than that of said opening, and a closure for the outer end of said spout secured to said outer flanges.

6. A container, comprising, a wall having an opening defined by an inwardly turned substantially cylindrical wall portion, and a spout positioned in said opening including a spout base of plastic material extending through said opening and including an inner end, an outer plastic flange integral with said base and bearing against an outer surface of the wall adjacent to said in-

wardly turned wall portion and in sealing contact therewith, and an inner plastic flange integral with said base and bearing against the inner edge of said inwardly turned wall portion, the inner flange being of small width to provide a step construction and said inwardly turned wall portion being located between said flanges, the spout base being tapered in a portion extending inwardly from adjacent to said inner flange to said inner end to aid in inserting said base into said opening, the extreme inner end of the spout having a diameter less than that of said opening, the portion of the spout between said flanges being relatively thick in comparison to the thickness of said tapered portion in order to aid in preventing accidental inward distortion thereof, the outer flange having an extreme outer edge tapered rearwardly toward the inner end of the spout, and a closure for the outer end of said spout secured to said outer flange.

References Cited in the file of this patent

UNITED STATES PATENTS

1,329,590	Ford	Feb. 3, 1920
1,924,242	Kaye	Aug. 29, 1933
2,098,128	Bailey	Nov. 2, 1937
2,152,001	Temple	Mar. 28, 1939
2,630,238	Battersby	Mar. 3, 1953
2,670,885	Allen	Mar. 2, 1954
2,687,831	Miller	Aug. 31, 1954
2,690,861	Tupper	Oct. 5, 1954
2,792,976	Stewart	May 21, 1957

FOREIGN PATENTS

834,509	Germany	Mar. 20, 1952
998,208	France	Sept. 19, 1951